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In re application of: Coleman, T.

Application Serial No.: 09/921,143

Art Unit: 1653

Filed: August 3, 2001

Examiner: Unassigned

For: Vascular Endothelial Growth Factor-2

Attorney Docket No.: PF112P6

INFORMATION DISCLOSURE STATEMENT
PURSUANT TO 37 § CFR 1.56

Commissioner for Patents
Washington, D.C. 20231

Sir:

In accordance with the duty of disclosure imposed by 37 C.F.R. § 1.56 to inform the Patent and Trademark Office of all references coming to the attention of each individual associated with the filing or prosecution of the subject application, which are or may be material to the patentability of a claim of the subject application, Attorneys for Applicants hereby direct the Examiner's attention to references AA-FW listed on the attached form PTO/SB/08A. A copy of each of references AA-FW is enclosed.

Applicants also wish to direct the Examiner's attention to the Statutory Declarations and accompanying exhibits as follows:

- ✓(a) Statutory Declaration of John Stanley Mattick, executed on December 12, 2000, and Exhibits JSM1-JSM4;
- ✓(b) Statutory Declaration of Nicholas Kim Hayward, executed on December 8, 2000, and Exhibits NKH1-2;
- ✓(c) Statutory Declaration of Jennifer Ruth Gamble, executed on December 12, 2000, and Exhibits JRG1-3;
- ✓(d) Statutory Declaration of Tom Rapoport, executed on December 13, 2000, and Exhibits TP1-2;
- ✓(e) Statutory Declaration of Stuart A. Aaronson, executed on December 14, 2000, and Curriculum Vitae of Stuart A. Aaronson;

- ✓(f) Statutory Declaration of Susan Power, executed on December 13, 2000, Appendices 1-2 and Figure 1;
- ✓(g) Statutory Declaration of Gary Baxter Cox, executed on December 13, 2000, and Exhibits GBC-1 – GBC 23;
- ✓(h) Statutory Declaration of Peter Adrian Walton Rogers, executed on November 12, 2001, and exhibits PAWR-1 through PAWR-14;
- ✓(i) Statutory Declaration of Peter Adrian Walton Rogers, executed on February 16, 2000, and exhibit 1;
- (j) Statutory Declaration of Kari Alitalo executed on February 15, 2000, and exhibits 1-3;
- (k) Statutory Declaration of Francis John Ballard, executed on February 16, 2000, and exhibit 1;
- (l) Statutory Declaration of Kari Alitalo, executed on September 24, 2001, and exhibits 1-2; and
- ✓(m) Statutory Declaration of Francis John Ballard, executed on December 12, 2001 and exhibit 1.

The above-listed declarations and accompanying exhibits were brought to the attention of the Applicants in connection with an opposition to an Australian application that essentially corresponds to the U.S. priority application in this case. A copy of the above-listed Declarations and accompanying exhibits thereto, are enclosed.

The above information is presented so that the Patent and Trademark Office can determine any materiality thereof to the claimed invention. See 37 CFR 1.104(a) concerning the PTO duty to consider and use any such information. It is respectfully requested that the information be considered during the prosecution of this application.

Identification of the listed reference(s) is not to be construed an admission of any individual associated with the filing or prosecution of the subject application that such references are available as “prior art” against the subject application. Furthermore, Applicants do not waive any rights to appropriate action to establish patentability over any of the listed documents should they be applied as references against the claims of the subject application.

Applicants respectfully request that the Examiner acknowledge receipt of the enclosed references AA-FW and Declarations and exhibits in the file of the instant application.

Pursuant to 37 C.F.R. § 1.97(b), since this information disclosure statement is being filed before the mailing date of a first Office Action on the merits, no fee is due in connection herewith. However, should the Patent Office determine otherwise, please charge the required fee to Human Genome Sciences, Inc., deposit account no. 08-3425.

Respectfully submitted,

Dated: 5/20/04, 2002



Michele M. Wales (Reg. No. 43,975)
Attorney for Applicants

Human Genome Sciences, Inc.
9410 Key West Avenue
Rockville, Maryland 20850
Telephone: (301) 610-5772

Enclosures
MMW/AKR/lcc

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet **1** of **9**

Complete if Known

Application Number	09/921,143
Filing Date	August 3, 2001
First Named Inventor	Coleman, T.
Group Art Unit	1653
Examiner Name	Unassigned
Attorney Docket Number	PF112P6



U.S. PATENT DOCUMENTS						
Examiner Initials ¹	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
	AA	6,040,157		Hu et al.	03-21-2000	
	AB	5,935,820		Hu et al.	08-10-1999	
	AC	5,932,540		Hu et al.	08-03-1999	
	AD	5,633,147		Meissner et al.	05-27-1999	
	AE	5,283,354		Lemischka	02-01-1994	
	AF	5,240,848		Keck et al.	08-31-1993	
	AG	5,234,908		Szabo et al.	08-10-1993	
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	AI	5,861,301		Terman et al.	01-19-1999	
	AJ	5,840,693		Eriksson et al.	11-24-1999	
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	AL	5,219,739		Tischer et al.	06-15-1993	
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	AN	5,607,918		Eriksson et al.	03-04-1997	
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	AR	08/601132			02/1996	
	AS	08/671573			06/1996	
	AT	60/003491			09/1995	
	AU	08/554374			11/1995	

FOREIGN PATENT DOCUMENTS								
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		Office ³	Number ⁴	Kind Code ⁵ (if known)				
	AV	WO	99/46364		Human Genome Sciences, Inc.	09-16-1999		
	AW	WO	98/33917		Ludwig Institute for Cancer Research/Univ. Helsinki Licensing Ltd.	06-08-1998		

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Sheet 2 of 9

FOREIGN PATENT DOCUMENTS

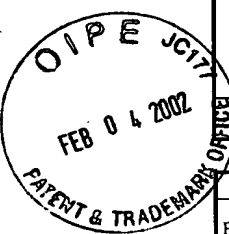
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		Office ³	Number ⁴	Kind Code ⁵ (if known)				
	AX	WO	98/07832		Ludwig Institute for Cancer Research/Univ. Helsinki Licensing Ltd. Oy	02-26-1998		
	AY	WO	96/39515		Human Genome Sciences, Inc.	12-12-1996		
	AZ	WO	96/05856		Human Genome Sciences, Inc.	02-29-1996		
	BA	WO	00/75163		Human Genome Sciences	12-14-2000		
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	BC	WO	95/24473		Human Genome Sciences	12-14-1995		
	BD	EP	0 476983		Merck & Co., Inc.	03-25-1992		
	BE	WO	95/24414		Human Genome Sciences, Inc.	09-14-1995		
	BF	WO	95/19985		Human Genome Sciences, Inc.	07-27-1995		
	BG	WO	92/14748		American Cyanamid Co.	09-03-1992		
	BH		9-403464		Human Genome Sciences, Inc.	01-31-1996		
	BI	WO	99/21590		Merck & Co.	05-06-1999		
	BJ	WO	99/08522		Ludwig Institute for Cancer Research/Univ. Helsinki Licensing Ltd.	02-25-1999		
	BK	WO	98/56936		Max-Planck-Gesellschaft Zur Forderung Der Wissenschaften E.V.	12-17-1998		
	BL	WO	98/49300		Collateral Therapeutics	11-05-1998		
	BM	WO	98/39035		The Wistar Institute of Anatomy & Biology	09-11-1998		
	BN	WO	98/24811		Zymogenetics, Inc.	06-11-1998		
	BO	WO	98/06844		Human Genome Sciences, Inc.	02-19-1998		
	BP		710696		Genentech, Inc.	09-30-1999		
	BQ		0-476983		Bayne et al.	03-25-1992		
	BR		0-506477		Bayne et al.	09-30-1992		
	BS	WO	97/05250		University of Helsinki	02-13-1997		
	BT	WO	97/09427		Genentech, Inc.	03-13-1997		

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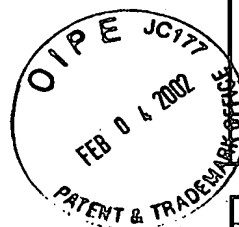


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Sheet	3	of	9	Attorney Docket Number	PF112P6



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	BU	WO	97/17442		Immunex Corporation	05-15-1997

OTHER REFERENCES - NON PATENT LITERATURE DOCUMENTS						
Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.				T ²
	BV	ACHEN <i>et al.</i> , "Vascular endothelial growth factor D (VEGF-D) is a ligand for the tyrosine kinases VEGF receptor-2 (Flk1) and VEGF receptor 3 (Flt4)," <i>Proc. Natl. Acad. Sci. (USA)</i> , 95(2): 548-553 (1998).				
	BW	ALDERSON, et al. (1999) Vascular endothelial cell growth factor (VEGF)-2 enhances the development of rat photoreceptor cells in vitro. Keystone Symposia, Ocular Cell and Molecular Biology, 202. (Abstract provided)				
	BX	ANDERSSON <i>et al.</i> , "Assignment of interchain disulfide bonds in platelet-derived growth factor (PDGF) and evidence for agonist activity of monomeric PDGF," <i>J. Biol. Chem.</i> , 267(16): 11260-11266 (1992).				
	BY	ANDERSSON W.F., "Human gene therapy," <i>Science</i> , 256:808-813 (1992).				
	BZ	Aprelikova <i>et al.</i> , "FLT4, a novel class III receptor tyrosine kinase in chromosome 5q33-qter," <i>Cancer Research</i> , 52:746-748 (1992).				
	CA	DIGNAM <i>et al.</i> , "Balbiani ring 3 in <i>chironomus tentans</i> encodes a 185-kDa secretory protein which is synthesized throughout the fourth larval instar," <i>Gene</i> 88:133-140 (1990).				
	CB	FERRARA <i>et al.</i> , "Molecular and biological properties of the vascular endothelial growth factor family of proteins," <i>Endocrine Rev.</i> 13(1): 18-32 (1992).				
	CC	FINNERTY <i>et al.</i> , "Molecular cloning of murine FLT and FLT4," <i>Oncogene</i> 8(11): 2293-2298 (1993).				
	CD	HELDIN <i>et al.</i> , "Structure of platelet-derived growth factor: implications for functional properties," <i>Growth Factors</i> 8:245-252 (1993).				
	CE	EICHMANN <i>et al.</i> , "Avian VEGF-C: cloning, embryonic expression pattern and stimulation of the differentiation of VEGFR2-expressing endothelial cell precursors," <i>Development</i> 125(4): 743-752 (1998).				
	CF	PAJUSOLA <i>et al.</i> , "FLT4 receptor tyrosine kinase contains seven immunoglobulin-like loops and is expressed in multiple human tissues and cell lines," <i>Cancer Research</i> 52:5738-5743 (1992).				
	CG	LEUNG <i>et al.</i> , "Vascular endothelial growth factor is a secreted angiogenic mitogen," <i>Science</i> 246:1306-1309 (1989).				
	CH	BREIER <i>et al.</i> , "Expression of vascular endothelial growth factor during embryonic angiogenesis and endothelial cell differentiation," <i>Development</i> 114:521-532 (1992).				

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Sheet 4 of 9

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Application Number	09/921,143
Filing Date	August 3, 2001
First Named Inventor	Coleman, T.
Group Art Unit	1653
Examiner Name	Unassigned
Attorney Docket Number	PF112P6

OTHER REFERENCES - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	CI	BELL <i>et al.</i> , "Human epidermal growth factor precursor: cDNA sequence, expression <i>in vitro</i> and gene organization," <i>Nucl. Acids Res.</i> 14(21): 8427-8446 (1986).	
	CJ	BERSE <i>et al.</i> , Vascular permeability factor (vascular endothelial growth factor) gene is expressed differentially in normal tissues, macrophages, and tumors," <i>Mol. Biol. Cell.</i> 3:211-220 (1992).	
	CK	BETSHOLTZ <i>et al.</i> , "cDNA sequence and chromosomal localization of human platelet-derived growth factor A-chain and its expression in tumor cell lines," <i>Nature</i> 320:695-699 (1986).	
	CL	CLAFFEY <i>et al.</i> , "Vascular endothelial growth factor," <i>J. Biol. Chem.</i> 267(23): 16317-16322 (1992).	
	CM	CORSON <i>et al.</i> , "Fibrillin binds calcium and is coded by cDNAs that reveal a multidomain structure and alternatively spliced exons at the 5' end," <i>Genomics</i> 17:476-484 (1993).	
	CN	FERRARA <i>et al.</i> , "The vascular endothelial growth factor family of polypeptides," <i>J. Cellular Biochemistry</i> 47:211-218 (1991).	
	CO	GEORGE <i>et al.</i> , "Current Methods in Sequence Comparison and Analysis," <i>Macromolecular Seq. and Syn. Selected Meth - Application</i> (Alan R. Liss), pp. 127-149 (1988).	
	CP	HU <i>et al.</i> , "A novel regulatory function of proteolytically cleaved VEGF-2 for vascular endothelial smooth muscle cells," <i>FASEB J.</i> , 11:498-504 (1997).	
	CQ	JOUKOV <i>et al.</i> , "A novel vascular endothelial growth factor, VEGF-C, is a ligand for the Flt4 (VEGFR-3) and KDR (VEGFR-2) receptor tyrosine kinases," <i>EMBO J.</i> 15(2): 290-298 (1996).	
	CR	JOUKOV <i>et al.</i> , "Proteolytic processing regulates receptor specificity and activity of VEGF-C," <i>EMBO J.</i> 16(13): 3898-3911 (1997).	
	CS	KAIPAINEN <i>et al.</i> , "The related FLT4, FLT1 and KDR receptor tyrosine kinases show distinct expression patterns in human fetal endothelial cells," <i>J. Exp. Med.</i> 178:2077-2088 (1993).	
	CT	KECK <i>et al.</i> , "Vascular permeability factor, an endothelial cell mitogen related to PDGF," <i>Science</i> 246: 1309 (1989).	
	CU	KINGSLEY, D., "The TGF- β superfamily: new members, new receptors, and new genetic tests of function in different organisms," <i>Genes & Development</i> 8: 133-146 (1994).	
	CV	KUKK <i>et al.</i> , "VEGF-C receptor binding and pattern of expression with VEGFR-3 suggests a role in lymphatic vascular development," <i>Development</i> 122: 3829-37 (1996).	

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Sheet **5** of **9**

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OTHER REFERENCES - NON PATENT LITERATURE DOCUMENTS

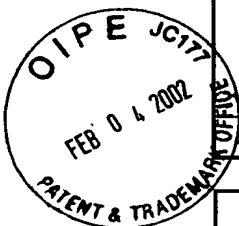
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	CW	LEE <i>et al.</i> , "Vascular endothelial growth factor-related protein: a ligand and specific activator of the tyrosine kinase receptor Flt4," <i>Proc. Natl. Acad. Sci. (USA)</i> , 93:1988-1992 (1996).	
	CX	MAGLIONE <i>et al.</i> , "Two alternative mRNAs coding for the angiogenic factor, placenta growth factor (PIGF), are transcribed from a single gene of chromosome 14," <i>Oncogene</i> 8:925-931 (1993).	
	CY	MAGLIONE <i>et al.</i> , "Isolation of a human placenta cDNA coding for a protein related to the vascular permeability factor," <i>Proc. Natl. Acad. Sci. (USA)</i> , 88:9267-9271 (1991).	
	CZ	MASSAGUE, J., "The transforming growth factor-beta family," <i>Annu. Rev. Cell Biol.</i> 6:597-641 (1990).	
	DA	MATTHEWS <i>et al.</i> , "A receptor tyrosine kinase cDNA isolated from a population of enriched primitive hematopoietic cells and exhibiting close genetic linkage to <i>c-kit</i> ," <i>Proc. Natl. Acad. Sci. (USA)</i> , 88:9026-9030 (1991).	
	DB	MILLAUER <i>et al.</i> , "High affinity VEGF binding and developmental expression suggest FLK-1 as a major regulator of vasculogenesis and angiogenesis," <i>Cell</i> 72:835-846 (1993).	
	DC	MILLAUER <i>et al.</i> , "Glioblastoma growth inhibited <i>in vivo</i> by a dominant-negative Flk-1 mutant," <i>Nature</i> 367:576-579 (1994).	
	DD	OLTVAI <i>et al.</i> , "Bcl-2 heterodimerizes <i>in vivo</i> with a conserved homolog, bax, that accelerates programmed cell death," <i>Cell</i> 74:609-619 (1993).	
	DE	PAULSSON <i>et al.</i> , "The balbani ring 3 gene in <i>chironomus tentans</i> has a diverged repetitive structure split by many introns," <i>J. Mol. Biol.</i> 211:331-349 (1990).	
	DF	PAJUSOLA <i>et al.</i> , "Two human FLT4 receptor tyrosine kinase isoforms with distinct carboxy terminal tails are produced by alternative processing of primary transcripts," <i>Oncogene</i> 8:2931-2937 (1993).	
	DG	TISCHER <i>et al.</i> , "Vascular endothelial growth factor: A new member of the platelet-derived growth factor gene family," <i>Biochem. & Biophys. Res. Comms.</i> 165(3): 1198-1206 (1989).	
	DH	TANAKA <i>et al.</i> , "DNA sequence encoding the amino-terminal region of the human <i>c-src</i> protein: implications of sequence divergence among <i>src</i> -type kinase oncogenes," <i>Mol. Cell Biol.</i> 7(5): 1978-1983 (1987).	
	DI	TERMAN <i>et al.</i> , "Identification of a new endothelial cell growth factor receptor tyrosine kinase," <i>Oncogene</i> 6:1677-1683 (1991).	
	DJ	TERMAN <i>et al.</i> , "Identification of the kdr tyrosine kinase as a receptor for vascular endothelial cell growth factor," <i>Biochem. Biophys. Res. Commun.</i> 187(3): 1579-1586 (1992).	

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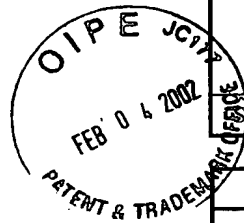


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	DK	TSUJIMOTO <i>et al.</i> , "Analysis of the structure, transcripts, and protein products of <i>bcl-2</i> , the gene involved in human follicular lymphoma," <i>Proc. Natl. Acad. Sci (USA)</i> , 83:5214-5218 (1986).	
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	DM	FRIEDMAN, T., "A brief history of gene therapy," <i>Nat. Genetics</i> 2:93-98 (1992).	
	DN	WILLIAMS, R.S. "Southwestern internal medicine conference: prospects for gene therapy of ischemic heart disease," <i>Am. J. Med. Sci.</i> 306(2): 129-136 (1993).	
	DO	HOCKEL <i>et al.</i> , "Therapeutic angiogenesis," <i>Arch. Surg.</i> 128:423-429 (1993).	
	DP	GUZMAN <i>et al.</i> "Efficient gene transfer into myocardium by direct injection of adenovirus vectors," <i>Circ. Res.</i> 73:1202-1207 (1993).	
	DQ	BELLOMO <i>et al.</i> , "Mice Lacking the Vascular Endothelial Growth Factor-B Gene (<i>Vegfb</i>) Have Smaller Hearts, Dysfunctional Coronary Vasculature, and Impaired Recovery From Cardiac Ischemia," <i>Circ. Research</i> 89(2): e29-e35 (2000).	
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	DS	GAMBLE <i>et al.</i> , "Regulation of In Vitro Capillary Tube Formation by Anti-Integrin Antibodies," <i>J. Cell. Bio.</i> 121(4): 931-943 (1993).	
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	DU	GRIMMOND <i>et al.</i> , "Cloning and Characterization of a Novel Human Gene Related to Vascular Endothelial Growth Factor," <i>Genome Research</i> 6:124-131 (1996).	
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	EB	STEWART <i>et al.</i> , "Insulin delivery by somatic cell gene therapy," <i>J of Mol. Endocrinology</i> 11: 335-341 (1993).	

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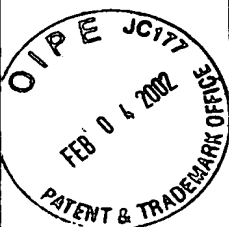


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				Filing Date	August 3, 2001
				First Named Inventor	Coleman, T.
				Group Art Unit	1653
				Examiner Name	Unassigned
Sheet	7	of	9	Attorney Docket Number	PF112P6



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	EC	TOWNSON <i>et al.</i> , "Characterization of the Murine VEGF-Related Factor Gene," <i>Biochem. & Biophys. Res. Comms.</i> 220: 922-928 (1996).	
	ED	WALSH <i>et al.</i> , "Gene Therapy for Human Hemoglobinopathies," <i>P.S.E.B.M.</i> 204: 289-300.	
	EF	YOUREY, et al. (2000) Vascular Endothelial Cell Growth Factors Promote the In Vitro Development of Rat Photoreceptor Cells. <i>J. Neuroscience</i> , 20: 6781 - 6788.	
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	EH	GenBank Accession No. X68203, APRELIKOVA <i>et al.</i> , "H.sapiens mRNA for FLT4, class III receptor tyrosine kinase," November 30, 1993.	
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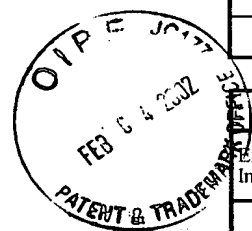
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	FL	GenBank Accession No. K03214, ANDERSON <i>et al.</i> , "Human c-src-1 proto-oncogene, exon 8," January 13, 1995.	

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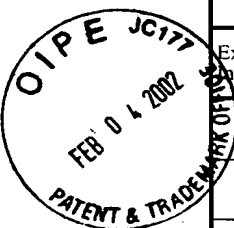
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	FQ	GenBank Accession No. M13994, TSUJIMOTO <i>et al.</i> , "Human B-cell leukemia/lymphoma 2 (bcl-2) proto-oncogene mRNA encoding bcl-2-alpha protein, complete cds," October 31, 1994.	
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	FW	International Search Report, Application No. PCT/US94/05291.	



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